

REMARKS/ARGUMENTS

Applicants have amended claim 1 to insert the limitation that the coil spring is held stationary as the tube portion is extended into the tube end, and has canceled claim 5. This claim and claims dependent thereon should be in condition for allowance.

Claim 6 has been amended to indicate that the internal diameter of the tube end is expanded more than the internal diameter of the coil spring on a percentage basis. This is supported on page 8 of the specification.

Claim 7 has been amended to indicate that the coil expands at least 3%.

Claim 9 has been amended to change "coil tube" to --coil spring--.

Finally, claim 10 has been amended to indicate that the tubing is air brake tubing.

Applicants maintain that these claims as amended should be allowable in light of the cited prior art.

The invention itself is a coupling for tubing which incorporates a coil spring. The coil spring acts to clamp the tubing in position. Basically, the barbed end of the fitting is inserted into the tube end with the coil spring in place. Due to the relative dimensions of the barbed end of the fitting and the coil spring, the insertion causes the coil spring to expand radially. The compressive force exerted by the radially expanding spring clamps down on the hose, compressing it and embedding itself into the hose, thereby forming an extremely strong connection.

It is, of course, known to use a coil spring at a fitment end of a hose. The purpose of the coil spring is for stress relief, in other words, to prevent kinking at the end of the hose. The cited prior art, Reum and Wiebe, both disclose this, but neither discloses the radial compressive force of the spring to hold a tube to the end of a hose.

With respect to claim 6, applicants have indicated that the internal diameter of the tube end is expanded more than the internal diameter of the coil spring. Previously, the claim was amended to insert the limitation that the coil spring expands at least 1%, and that the coil spring embeds itself into an exterior surface of the tube. The purpose of the Reum reference is to release stress at the tube end. The coil spring has no effect on holding the fitment to the tube end. The specification indicates that frictional engagement is required and nothing more. Further, the coil spring can be formed from plastic. As stated at column 3, lines 55 forward:

Coil spring 33 is sized to fit over the hose 12 but within the annular space 39 defined by collar 32. It is preferably extruded from rigid polyvinylchloride and has sufficient flex in its coiled form so that one end may expand radially when it is inserted into collar 32 end over the enlarged portion of the hose end 22 causing it to be frictionally retained. Alternatively, liquid solvent may be used to firmly secure strain relief device 33 to the outer hose surface.

This certainly does not disclose expanding the coil more than 1%, nor does it disclose embedding the coil into the exterior surface of the tube. A 1% expansion is relatively significant and certainly is greater than required for mere frictional engagement. If there was a required 1% expansion, it is possible that it would be very difficult to assemble the

device disclosed in Reum in the manner suggested. The fact that it discloses it in an alternate embodiment, simply adhering the polyvinylchloride spring to the exterior surface of the tubing, actually teaches away from the present invention.

With respect to claim 7, wherein applicants claim that the spring has expanded at least 3%, the argument is even stronger.

The Liebe reference is, again, primarily directed at protecting the hose end. The fitment uses a coiled spring trapped between an outer and inner portion of the fitment and compresses the tube between the spring and the inner portion of the fitment. The connection does not cause the spring to expand. The spring itself is held firmly in position and cannot expand radially. The spring is totally unnecessary to form a strong connection. The exterior portion of the fitment 18 could simply be sized to compress against the hose as the internal portion is inserted into the hose. But, since they desire to have the spring in position for stress relief, they have sized the external portion 18 to accommodate the spring. The invention really is simply taking advantage of this compression fitting to hold the stress release spring in position.

One cannot combine this reference with the teaching of Reum without destroying the function of the Liebe reference. If one were to allow the spring to expand, the outer fitment portion in Reum would be totally unnecessary. One would be designing a totally different type of a connection. Reum, on the other hand, does not require the spring to provide connective force with the fitment. As it indicates, solvent welding is fine.

Further, the spring disclosed in Reum is formed from polyvinylchloride which is unlikely to embed itself into the surface of the fitment. And, certainly, neither of these references discloses expansion of the spring in a radial direction to the extent of a 1% (or 3%) expansion. Further, there is no suggestion to combine the disclosures of these references. In fact, both of these references would teach away from any such combination. The Reum reference because it suggests that the spring does not have to have compressive against the fitment and the Liebe reference because it teaches a structure that prevents expansion of the coil spring. For this reason, is it applicant's contention that claim 6 as currently amended is unobvious in light of the combination of these reference because neither discloses this critical feature of a 1% expansion of the coil spring.

Further, with respect to apparatus claim 10, applicants have amended the claim to claim air brake tubing. Air brake tubing, of course, is tubing which is under elevated pressure. It is not merely required to withstand the forces of a garden hose or the like, it must be structurally stronger. Therefore, using applicants' method to construct a fitment for airbrake tubing certainly is not taught or suggested by either the Reum or Weibe reference. There is no suggestion in either of these references that such a structure will function as air brake tubing. The fact that it will is as surprising end result suggesting the patentability of the present invention.

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With respect to claim 10, the Reum and Weibe references also fail to disclose a 1% expansion of the coil spring. This is a significant expansion. Claim 10 not only requires a 1% expansion, but also that the spring be embedded into the exterior portion of the tube end. Again, this is not taught or suggested by either of the pending references. For these reasons, applicants would maintain that claim 10 and the claims dependent thereon are unobvious in light of the cited references and would request allowance of same.

Respectfully submitted,

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